American Diabetes Association 2018 Guidelines Important Notable Points

The Standards of Medical Care in Diabetes-2018 by ADA include the most current evidence-based recommendations for diagnosing and treating adults and children with diabetes.
Few notable points-

A1C Goals In Adults

- **The HbA1c goal for adults is <7%.**
- A more stringent HbA1C goal (such as <6.5%)
  - ✓ For selected individual patients if this can be achieved without significant hypoglycemia or other adverse effects of treatment (i.e., polypharmacy).
  - ✓ Include those with short duration of diabetes, type 2 diabetes treated with lifestyle or metformin only, long life expectancy, or no significant CVD.
- Less stringent HbA1C goal (such as <8%)
  - ✓ For patients with a history of severe hypoglycemia, limited life expectancy, advanced microvascular or macrovascular complications, extensive comorbid conditions, or long-standing diabetes in whom the goal is difficult to achieve despite diabetes self-management education, appropriate glucose monitoring, and effective doses of multiple glucose-lowering agents including insulin.

Summary Of Glycemic Recommendations For Many Nonpregnant Adults With Diabetes	
HbA1c	**< 7.0 %***
Preprandial capillary plasma glucose	**80-130 mg/dL***
Peak postprandial capillary plasma glucose ł	**< 180 mg/ dL***

* More or less stringent glycemic goals may be appropriate for individual patients. Goals should be individualized based on duration of diabetes, age/life expectancy, comorbid conditions, known CVD or advanced microvascular complications, hypoglycemia unawareness, and individual patient considerations.
ł Postprandial glucose may be targeted if HbA1c goals are not met despite reaching preprandial glucose goals. Postprandial glucose measurements should be made 1-2 hrs. after the beginning of the meal, generally peak levels in patients with diabetes.

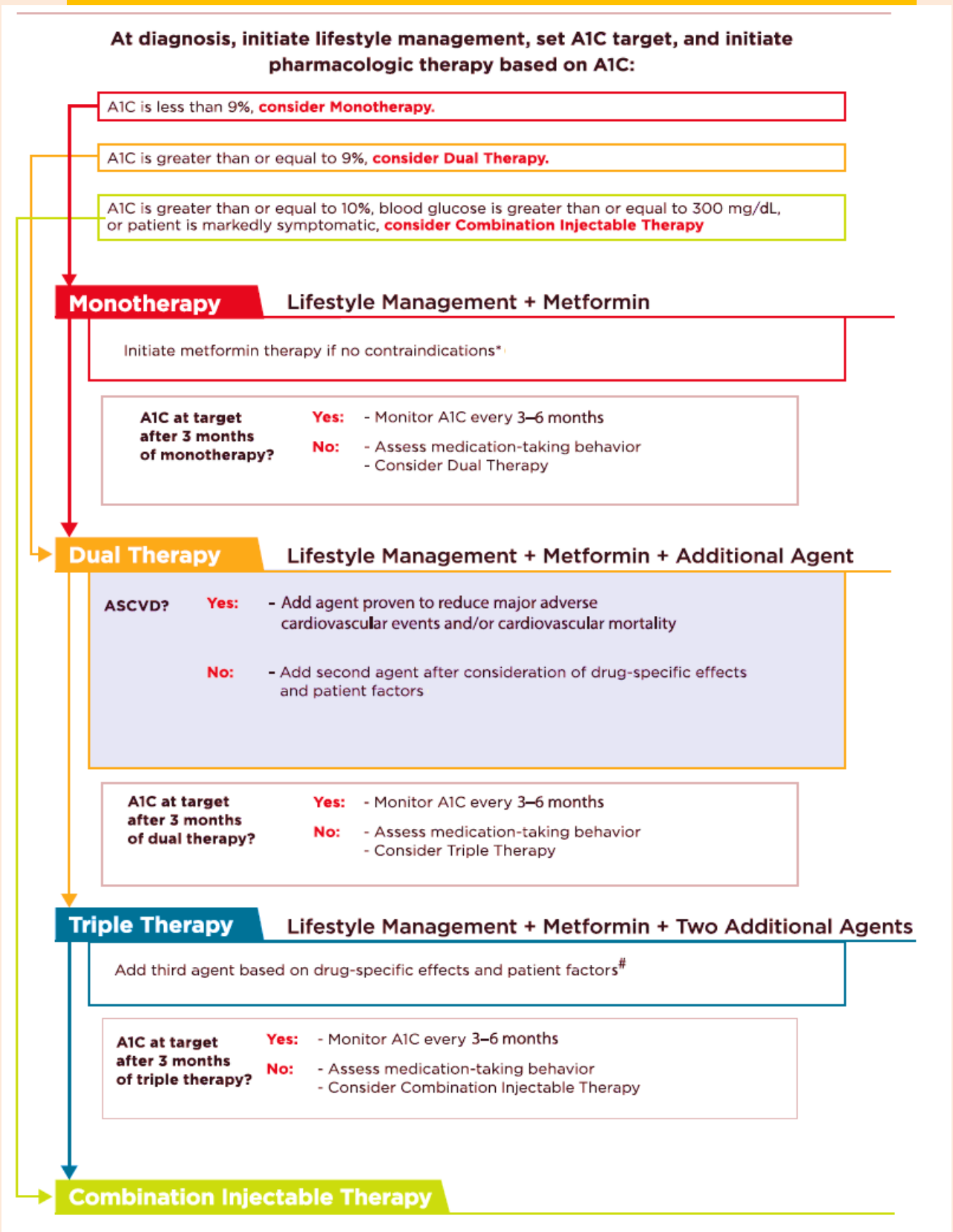
Pharmacologic Approaches To Glycemic Treatment

- **Metformin,** if not contraindicated and if tolerated, is the **preferred initial pharmacologic agent** for the treatment of T2DM.
- Long-term use of Metformin may be associated with biochemical vitamin B12 deficiency, and periodic measurement of vitamin B12 levels should be considered in Metformin-treated patients, especially in those with anemia or peripheral neuropathy.
- **Consider initiating insulin therapy** (with or without additional agents) in patients with newly diagnosed T2DM who are symptomatic and/or have **HbA1C ≥10% and/or blood glucose levels ≥300 mg/dL.**
- **Consider initiating dual therapy** in patients with newly diagnosed T2DM who have **HbA1C ≥9%.**
- In **patients without atherosclerotic cardiovascular disease (ASCVD), if monotherapy or dual therapy does not achieve or maintain the HbA1C goal over 3 months, add an additional antihyperglycemic agent** based on drug-specific and patient factors.
- **In patients with T2DM and established ASCVD, antihyperglycemic therapy should begin with** lifestyle management and **Metformin** and subsequently **incorporate an**

agent proven to reduce major adverse CV events and CV mortality (currently Empagliflozin and Liraglutide), after considering drug-specific and patient factors.

- In patients with T2DM and established ASCVD, after lifestyle management and Metformin, the antihyperglycemic agent canagliflozin may be considered to reduce major adverse CV events, based on drug-specific and patient factors.

Antihyperglycemic Therapy In Adults With Type 2 Diabetes

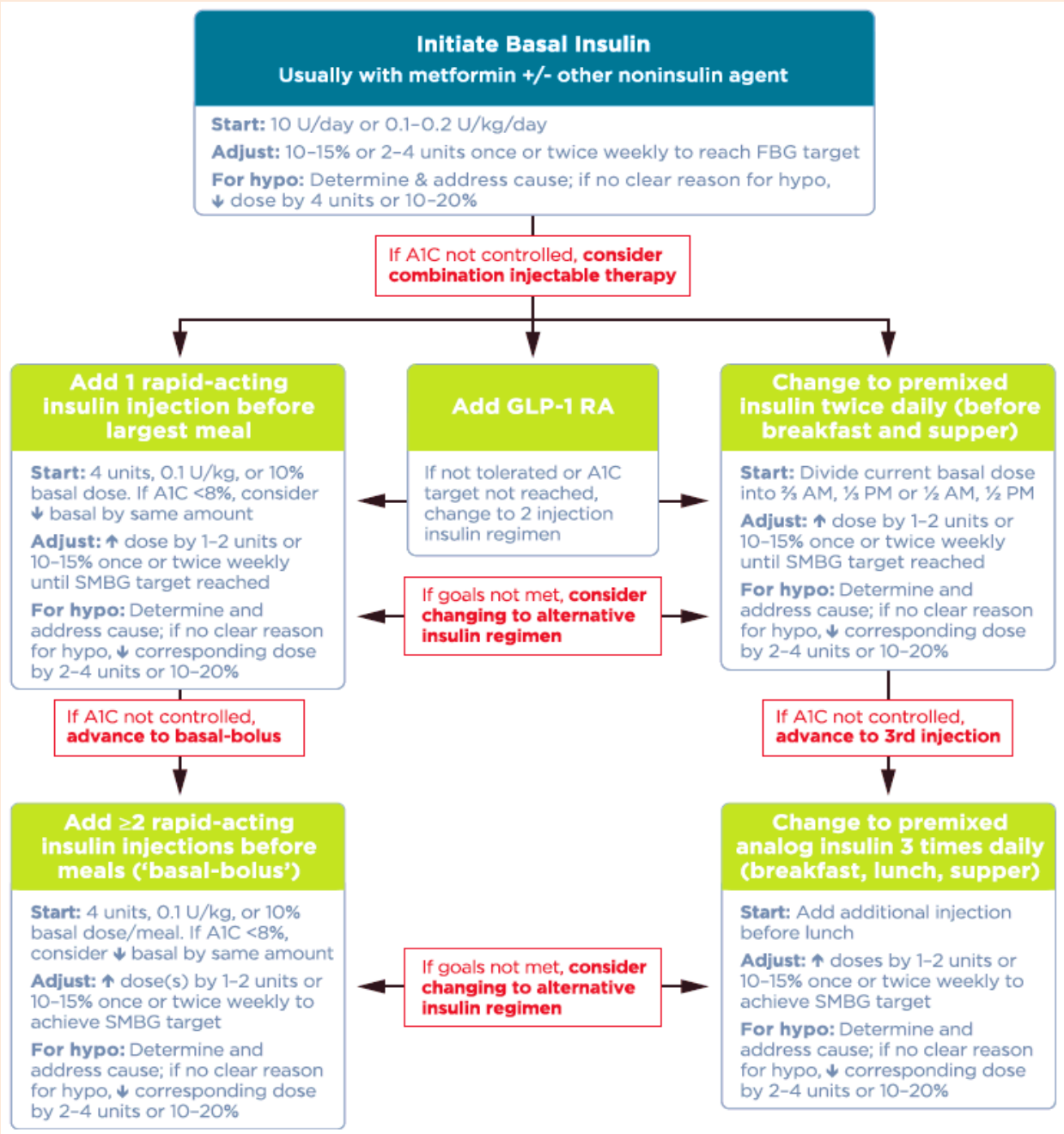


* If patient does not tolerate or has contraindications to Metformin, consider agents from another class.
# GLP-1 agonists & DPP-4 inhibitors should not be prescribed in combination. If a patient with ASCVD is not yet on an agent with evidence of cardiovascular risk reduction, consider adding.

Drug-Specific & Patient Factors To Consider When Selecting Antihyperglycemic Agents In Adults

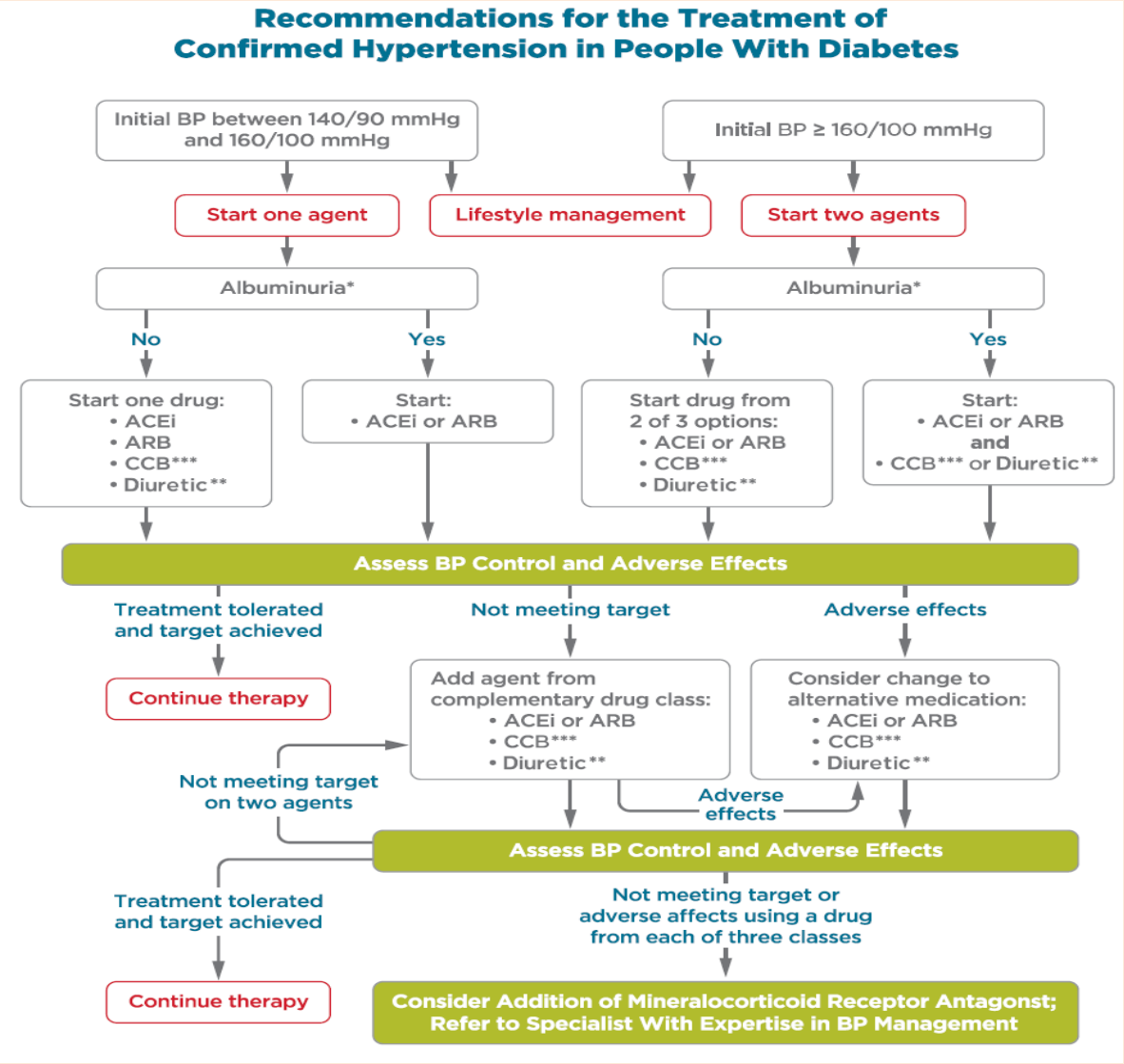
	Efficacy*	Hypoglycemia	Weight Change	CV Effects		Oral/SQ	Renal Effects		Additional Considerations
				ASCVD	CHF		Progression of DKD	Dosing/Use considerations	
Metformin	High	No	Neutral (Potential for Modest Loss)	Potential Benefit	Neutral	Oral	Neutral	▪ Contraindicated with eGFR <30	▪ Gastrointestinal side effects common (diarrhea, nausea) ▪ Potential for B12 deficiency
SGLT-2 Inhibitors	Intermediate	No	Loss	Benefit: canagliflozin, empagliflozin†	Benefit: canagliflozin, empagliflozin	Oral	Benefit: canagliflozin, empagliflozin	▪ Canagliflozin: not recommended with eGFR <45 ▪ Dapagliflozin: not recommended with eGFR <60; contraindicated with eGFR <30 ▪ Empagliflozin: contraindicated with eGFR <30	▪ **FDA Black Box:** Risk of amputation (**canagliflozin**) ▪ Risk of bone fractures (canagliflozin) ▪ DKA risk (all agents, rare in T2DM) ▪ Genitourinary infections ▪ Risk of volume depletion, hypotension ▪ ↑LDL cholesterol
GLP-1 RAs	High	No	Loss	Neutral: lixisenatide, exenatide extended release Benefit: liraglutide†	Neutral	SQ	Benefit: liraglutide	▪ Exenatide: not indicated with eGFR <30 ▪ Lixisenatide: caution with eGFR <30 ▪ Increased risk of side effects in patients with renal impairment	▪ **FDA Black Box:** Risk of thyroid C-cell tumors (**liraglutide, albiglutide, dulaglutide, exenatide extended release**) ▪ Gastrointestinal side effects common (nausea, vomiting, diarrhea) ▪ Injection site reactions ▪ ?Acute pancreatitis risk
DPP-4 Inhibitors	Intermediate	No	Neutral	Neutral	Potential Risk: saxagliptin, alogliptin	Oral	Neutral	▪ Renal dose adjustment required; can be used in renal impairment	▪ Potential risk of acute pancreatitis ▪ Joint pain
Thiazolidinediones	High	No	Gain	Potential Benefit: pioglitazone	Increased Risk	Oral	Neutral	▪ No dose adjustment required ▪ Generally not recommended in renal impairment due to potential for fluid retention	▪ **FDA Black Box:** Congestive heart failure [**pioglitazone, rosiglitazone**] ▪ Fluid retention (edema; heart failure) ▪ Benefit in NASH ▪ Risk of bone fractures ▪ Bladder cancer (pioglitazone) ▪ ↑LDL cholesterol (rosiglitazone)
Sulfonylureas (2nd Generation)	High	Yes	Gain	Neutral	Neutral	Oral	Neutral	▪ Glyburide: not recommended ▪ Glipizide & glimepiride: initiate conservatively to avoid hypoglycemia	▪ FDA Special Warning on increased risk of cardiovascular mortality based on studies of an older sulfonylurea (tolbutamide)
Insulin — **Human Insulin**	Highest	Yes	Gain	Neutral	Neutral	SQ	Neutral	▪ Lower insulin doses required with a decrease in eGFR; titrate per clinical response	▪ Injection site reactions ▪ Higher risk of hypoglycemia with human insulin (NPH or premixed formulations) vs. analogs
Insulin — **Analogs**						SQ			

Combination Injectable Therapy For Type 2 Diabetes



Recommendations For Treatment Of Hypertension In People With Diabetes

- **For People with Diabetes and Hypertension** should be treated to **SBP/DBP goal of <140 mmHg/ <90 mmHg.**
- **For individuals at high risk of CVD**, **Lower SBP/DBP target- 130/80 mmHg** may be appropriate if they can be achieved without undue treatment burden.
- **For Pregnant patients with diabetes and pre-existing hypertension**, **BP targets of 120-160/80-105 mmHg** are suggested.



*An ACE inhibitor (ACEi) or ARB is suggested to treat hypertension for patients with UACR 30–299 mg/g creatinine and strongly recommended for patients with UACR ≥300 mg/g creatinine. **Thiazide-like diuretic; long-acting agents shown to reduce cardiovascular events, such as chlorthalidone and indapamide, are preferred. ***Dihydropyridine calcium channel blocker. BP, blood pressure.

Recommendations For Statins & Combination In Adults With Diabetes

Age	ASCVD	Recommended Statin intensity^ & Combination treatment *
< 40 years	No	None ǂ
	Yes	High • If LDL cholesterol ≥ 70 mg/dL despite maximally tolerated statin dose, consider adding additional LDL- lowering therapy (such as ezetimibe or PCSK9 inhibitor)#
≥ 40 years	No	Moderate $
	Yes	High • If LDL cholesterol ≥ 70 mg/dL despite maximally tolerated statin dose, consider adding additional LDL- lowering therapy (such as ezetimibe or PCSK9 inhibitor)

* In addition to lifestyle therapy. ^ For patients who do not tolerate the intended intensity of statin, the maximally tolerated statin dose should be used. ǂ Moderate intensity statin may be considered based on risk-

benefit profile and presence of ASCVD risk factors. ASCVD risk factors include LDL cholesterol ≥ 100 mg/dL, high blood pressure, smoking, chronic kidney disease, albuminuria and family history of premature ASCVD. $ High intensity statin may be considered based on risk-benefit profile and presence of ASCVD risk factors.
Adults aged < 40 years with prevalent ASCVD were not well represented in clinical trials of non-statin-based LDL reduction. Before initiating combination lipid-lowering therapy, consider the potential for further ASCVD risk reduction, drug- specific adverse effects, and patient preferences.

High-intensity & Moderate-intensity statin therapy*	
High- intensity statin therapy (Lowers LDL cholesterol by ≥ 50%)	**Moderate- intensity statin therapy (Lowers LDL cholesterol by 30% to 50%)**
Atorvastatin 40-80 mg	Atorvastatin 10-20 mg
Rosuvastatin 20-40 mg	Rosuvastatin 5-10 mg
	Simvastatin 20-40 mg
	Pravastatin 40-80 mg
	Lovastatin 40 mg
	Fluvastatin XL 80 mg
	Pitavastatin 2-4 mg
* Once-daily dosing. XL-extended release	

Framework For Considering Treatment Goals For Glycemia, BP & Dyslipidemia In Older Adult With Diabetes

Patient Characteristics/ Health Status	Rationale	Reasonable A1C Goal‡	Fasting or Preprandial Glucose	Bedtime Glucose	Blood Pressure	Lipids
Healthy (few coexisting chronic illnesses, intact cognitive and functional status)	Longer remaining life expectancy	<7.5% (58 mmol/mol)	90–130 mg/dL (5.0–7.2 mmol/L)	90–150 mg/dL (5.0–8.3 mmol/L)	<140/90 mmHg	Statin unless contraindicated or not tolerated
Complex/intermediate (multiple coexisting chronic illnesses* or 2+ instrumental ADL impairments or mild-to-moderate cognitive impairment)	Intermediate remaining life expectancy, high treatment burden, hypoglycemia vulnerability, fall risk	<8.0% (64 mmol/mol)	90–150 mg/dL (5.0–8.3 mmol/L)	100–180 mg/dL (5.6–10.0 mmol/L)	<140/90 mmHg	Statin unless contraindicated or not tolerated
Very complex/poor health (LTC or end-stage chronic illnesses** or moderate-to-severe cognitive impairment or 2+ ADL dependencies)	Limited remaining life expectancy makes benefit uncertain	<8.5%† (69 mmol/mol)	100–180 mg/dL (5.6–10.0 mmol/L)	110–200 mg/dL (6.1–11.1 mmol/L)	<150/90 mmHg	Consider likelihood of benefit with statin (secondary prevention more so than primary)

*This represents a consensus framework for considering treatment goals for glycemia, blood pressure, and dyslipidemia in older adults with diabetes. The patient characteristic categories are general concepts. Not every patient will clearly fall into a particular category. Consideration of patient and caregiver preferences is an important aspect of treatment individualization. Additionally, a patient's health status and preferences may change over time. ‡A lower A1C goal may be set for an individual if achievable without recurrent or severe hypoglycemia or undue treatment burden. *Coexisting chronic illnesses are conditions serious enough to require medications or lifestyle management and may include arthritis, cancer, congestive heart failure, depression, emphysema, falls, hypertension, incontinence, stage 3 or worse chronic kidney disease, myocardial infarction, and stroke. By "multiple," we mean at least three, but many patients may have five or more. **The presence of a single end-stage chronic illness, such as stage 3–4 congestive heart failure or oxygen-dependent lung disease, chronic kidney disease requiring dialysis, or uncontrolled metastatic cancer, may cause significant symptoms or impairment of functional status and significantly reduce life expectancy. †A1C of 8.5% (69 mmol/mol) equates to an estimated average glucose of ~200 mg/dL (11.1 mmol/L). Looser A1C targets above 8.5% (69 mmol/mol) are not recommended as they may expose patients to more frequent higher glucose values and the acute risks from glycosuria, dehydration, hyperglycemic hyperosmolar syndrome, and poor wound healing. ADL, activities of daily living.*

For any scientific queries on above topic
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